

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

REC'D 05 JUL 2006

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Applicant's or agent's file reference D-04002 PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP2004/002367	International filing date (day/month/year) 08.03.2004	Priority date (day/month/year) 08.03.2004
International Patent Classification (IPC) or both national classification and IPC INV. C08G65/00 C11D1/722		
Applicant SASOL GERMANY GMBH et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 07.10.2005	Date of completion of this report 04.07.2006
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Kositza, M Telephone No. +49 89 2399-7885



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP2004/002367

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-6, 8-15	as originally filed
7	received on 08.02.2006 with letter of 08.02.2006

Claims, Numbers

2(part), 3-15	as originally filed
1, 2(part)	received on 08.02.2006 with letter of 08.02.2006

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/EP2004/002367**

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-15
	No: Claims	
Inventive step (IS)	Yes: Claims	1-15
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-15
	No: Claims	

2. Citations and explanations

see separate sheet

✓ **INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP2004/002367

Citations

- D1: WO 99/18929 A (CONNOR DANIEL STEDMAN ; VINSON PHILLIP KYLE (US);
COFFINDAFFER TIMOTHY) 22 April 1999 (1999-04-22)
D2: EP-A-0 882 785 (KAO CORP) 9 December 1998 (1998-12-09)
D3: US-A-4 280 919 (STOECKIGT DIETER ET AL) 28 July 1981 (1981-07-28)
D4: DE 203 03 420 U (SASOL GERMANY GMBH) 25 September 2003 (2003-09-25)

Independent claims

Product claim 1 relates to mixed alcohol block alkoxylates of formula (V) comprising linear and branched hydrophobic parts R.

Use claim 14 relates to the use of the mixed alcohol block alkoxylates (V) as low-foaming, foam-suppressing and anti-foam surfactants.

Use claim 15 relates to the use of the mixed alcohol block alkoxylates (V) in detergents and cleaners.

Novelty

Claims 1, 14 and 15 are novel.

None of D1-D4 describes mixed alcohol block alkoxylates (V) according to claim 1.
Therefore, claims 1, 14 and 15 are novel.

Inventive step

Claims 1, 14 and 15 involve an inventive step.

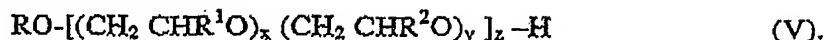
Closest prior art is D2 or D3. The present mixed alcohol block alkoxylates (V) comprising linear and branched hydrophobic parts R show low-foaming, high biodegradability and improved wetting when used in detergents and cleaners (see present examples). Such a performance is surprising and could not be derived from the prior art. Therefore, claims 1, 14 and 15 involve an inventive step.

Industrial applicability

The claimed subject-matter is industrially applicable.

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R^1 , R^2 , x , y and z in general formula V:



are defined as follows:

- 5 R^1 and R^2 are independent of one another and optionally different for each z , selected from the group consisting of :

H and linear aliphatic C1 to C3 hydrocarbons and preferably are methyl and/or ethyl with the proviso that R^1 and R^2 are not the same for one z ,

- 10 x and y are independent of one another and optionally different for each z values from 1 to 10, ~~preferably with the proviso that at least one x or y is equal to or greater than 2 and more preferably 2 to 10, and~~
 z has a value of from 1 to 5.

- 15 Further wherein R^1 is H, x preferably falls in the range from 1 to 10, more preferably in the range 1 to 6, with R^2 methyl, ethyl or propyl and y preferably in the range from 1 to 10, more preferably in the range 1 to 6. z is preferably in the range 1 to 2, more preferably 1.

- 20 Alternatively when R^1 is methyl, ethyl or propyl, x preferably falls in the range from 1 to 10, more preferably in the range 2 to 6, with R^2 equals H and y preferably in the range from 1 to 10, more preferably in the range 2 to 6. z is preferably in the range 1 to 2, more preferably 1.

- 25 The non-ionic surfactant having the general formula (V) can be prepared with known techniques, for example by reacting an alcohol R-OH with ethylene oxide and propylene oxide or butylene oxide, alternating blocks of the former with blocks of the latter, in the presence of a base catalyst selected from the hydroxides of alkaline or earth-alkaline metals or from mixed oxides of magnesium-zinc, magnesium-tin, magnesium-titanium or magnesium-antimony, or acids like H_2SO_4 , or Lewis acids like $TiCl_4$. Also
 30 catalysts based on a mixture of calcium hydroxide, dispersed in an alcohol ethoxylate medium, partially neutralized with 2-ethylhexanoic acid and sulfuric acid and also catalysts based on a mixture of calcium hydroxide, dispersed in an alcohol ethoxylate medium, partially neutralized with 2-phenylhexanoic acid and sulfuric acid and mixed with aluminium alkoxide, can be used. More preferred are the catalysts KOH, NaOH,

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Claims

1. Composition comprising alcohol alkoxylates of the general formula (V).



5 wherein the residue RO is derivable from a mixture of alcohols ROH, being essentially primary alcohols, essentially consisting of

(a) from more than 20 to 80 % by mass of alcohols that are linear and aliphatic and comprise 8 to 20 carbon atoms,

10 (b) from more than 10 to 80 % by mass of alcohols that are aliphatic and comprise
 - 8 to 20 carbon atoms, and
 - 1, 2 or 3 carbon atoms are tertiary carbon atoms whereas
 - none of the two carbon atoms in the 1 or 2 position relative to the OH group is a tertiary carbon atom and

15 (c) up to 25 % by mass of alcohols are different to (a) and (b) and comprise 8 to 20 carbon atoms,

wherein for all alcohols according to (a), (b) and (c)

20 - at least 80 % of the tertiary carbon atoms related to the total of all tertiary carbon atoms in the alcohol mixture are not directly adjacent,
 - the alcohols according to (a), (b) and (c) supplement one another essentially to 100 % by mass and

wherein for the alcohols (b) and (c) that may comprise alkyl branching

- at least 80 % of the alkyl branches are methyl and/or ethyl and

25 R^1 and R^2 are independent of one another and optionally different for each z, selected from the group consisting of
 H and linear aliphatic C1 to C3 hydrocarbons with the proviso that R^1 and R^2 are not the same for one z,

x and y have independent of one another and optionally different for each z values from 2 to 10 and

30 z has a value of from 1 to 5.

2. Composition according to claim 1 wherein

x is from 2 to 6,

y is from 2 to 6,

z is from 1 to 2, preferably 1, and

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